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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,360	09/22/2003	Richard Johannes Franciscus Van Haren	081468-0306007	4890
909	7590	10/20/2006	EXAMINER	
PILLSBURY WINTHROP SHAW PITTMAN, LLP			LAUCHMAN, LAYLA G	
P.O. BOX 10500			ART UNIT	
MCLEAN, VA 22102			PAPER NUMBER	
			2877	

DATE MAILED: 10/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/665,360	Applicant(s) VAN HAREN ET AL.	
	Examiner L. G. Lauchman	Art Unit 2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) 31-33 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-8 and 11-20 is/are allowed.
- 6) ☐ Claim(s) 9,10,21-30 and 34-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date
:01/2004;05/2004;03/2004;10/2005.

Election/Restrictions

Applicant's election without traverse of Group 1, claims 1-30, 34-41 in the reply filed on 08/09/2006 is acknowledged. Claims 31-33 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 9, 10, and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Huang et al (US 6,420,791) ("Huang").

Huang discloses a an alignment mark design on a substrate for optical alignment of the substrate, comprising (see Fig. 3b): a plurality of first structural elements (318 312); and a plurality of second structural elements (308, 302), the mark design capable of directing light incident thereon to a sensor for determining alignment information, the alignment information comprising information relating to a position of the substrate (col. 1. lines 18-30, wherein the first structural element has a first reflecting surface on a first level and a second reflecting surface on a second level lower than the first level, the second structural element is substantially non-reflecting (layer 304 is a dielectric non-reflective layer), a separation between the first and

second reflecting surfaces (314) determines a phase depth condition for the detected light, and the second reflecting surface comprises a plurality of additional structural elements located above an opaque layer (300).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 21-30, 35, 41 are rejected under 35 U.S.C. 102(e) as being anticipated by Adel et al by (US 6,985,618), (“Adel”).

As to Claims 21-30, Adel discloses a marker structure on a substrate for optical alignment of the substrate, the marker structure comprising: (Figs. 9, 11, 12) a plurality of first structural elements (192 B, C, G, F); and a plurality of second structural elements (192A,D, H, E), the marker structure capable of directing light incident thereon to a sensor, wherein the first structural elements comprise a plurality of primary lines and a plurality of first interposed lines. The first and the second structural elements are arranged to form a diffraction grating (see col. 18, lines 41-59), the primary lines comprise a first material and the first interposed lines comprise a second material, the first material has a first resistance to chemical mechanical polishing, the second material has a second resistance to chemical mechanical polishing, and the first resistance is different from the second resistance, and the plurality of first interposed lines form a periodic structure. (col. 33, line 61 through coil 34, line 43), the periodic structure extends

in a direction substantially perpendicular/parallel to a periodic direction of the diffraction grating (Figs 9,11,12).

As to claim 35, Adel discloses a lithographic projection apparatus (FIG. 19), comprising: a radiation system 326 configured to provide a projection beam of radiation; a support 356 configured to support a patterning device, the patterning device configured to pattern the projection beam according to a desired pattern; a substrate table configured to hold a substrate; a projection system configured to project the patterned beam onto a target portion of the substrate; a substrate alignment system configured to detect a position of the substrate relative to a position of the patterning device (col. 4, line 62 through col. 5, lines 45); and the substrate comprising at least one marker structure according to claim 21.

As to Claim 41, Adel discloses a method of alignment of a substrate in a lithographic projection apparatus, the method comprising (see Figs. 9,11,12,19 and corresponding description): providing at least one light beam directed on a marker structure, the marker structure capable of directing light incident thereon to a sensor, wherein the first structural elements comprise a plurality of primary lines and a plurality of first interposed lines; and detecting alignment information from the light received from the marker structure at the sensor (col. 4, line 62 through col. 5, lines 45).

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 36-41 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The claims are directed to a judicial exception; as such, pursuant to the Interim Guidelines on Patent Eligible Subject Matter (MPEP 2106)), the claims must have either physical transformation and/or a useful, concrete and tangible result. The claims fail to include transformation from one physical state to another. Although, the claims appear useful and concrete, there does not appear to be a tangible result claimed. The practical application of the claimed invention cannot be realized until the information is conveyed to the user. For the results to be tangible, it would need to output to a user, displayed to a user, stored for later use, or used in any tangible manner. Merely determining alignment information from the light at the sensor would not appear to be sufficient to constitute a tangible result, since the outcome of the determining step has not been used in the disclosed practical application nor made available in such a manner that its usefulness in a disclosed practical application can be realized. Therefore, the subject matter of the claims is not patent eligible.

Part b. *Practical Application the Produces a Useful, Concrete, and Tangible Result* under Section IV *Determine Whether the Claimed Invention Complies with the Subject Matter Eligibility Requirement of 35 U.S.C. Sec. 101*, sentence 3, in the OG Notice from 22 November 2005 states, “In determining whether the claim is for a “practical application,” the focus is not on whether the steps taken to achieve a particular result are useful, tangible, and concrete, but rather that the final result achieved by the claimed invention is “useful, tangible, and concrete.”

See OG Notices: 22 November 2005, "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility". MPEP 2106.

Web site <http://www.uspto.gov/web/offices/com/sol/og/2005/week47/patgupa.htm>

Allowable Subject Matter

Claims 1-8, 11-20 allowed.

The following is an examiner's statement of reasons for allowance:

As to Claim 1, the prior art of record taken along or in combination, fails to disclose or render obvious the second structural element being substantially non-reflecting, a separation between the first and second reflecting surfaces determining a phase depth condition for the detected light, and a recess provided in the second reflecting surface to modify the phase depth condition, in combination with the rest of the limitations of the claim.

As to Claim 11, the prior art of record taken along or in combination, fails to disclose or render obvious the first and second structural elements being arranged in a repetitive order, the third width is equal to the first width and the fourth width is equal to the second width, and the first structural elements in the second periodic structure are located adjacent to the first structural elements in the first periodic structure in such a manner that the second periodic structure is complementary to the first periodic structure, in combination with the rest of the limitations of the claim.

As to Claim 12, the prior art of record taken along or in combination, fails to disclose or render obvious the first and second structural elements being arranged in a complementary configuration such that in the absence of asymmetric damage to the first and second structural

elements, a first signal is detected at the sensor and in the presence of asymmetric damage to the first and second structural elements a second signal is detected at the sensor, in combination with the rest of the limitations of the claim.

As to Claim 16, the prior art of record taken along or in combination, fails to disclose or render obvious the first surface area portion is related to a first buried marker element, and the second surface area portion is related to a second buried marker element, the first and the second surface states are related to variations in morphology of the metallization layer being induced by the first buried marker element and the second buried marker element, respectively, in combination with the rest of the limitations of the claim.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to L. G. Lauchman whose telephone number is (571) 272-2418. The examiner's normal work schedule is 8:00am to 4:30pm (EST), Monday through Friday. If attempts to reach examiner by the telephone are unsuccessful, the examiner's supervisor Gregory J. Toatley, Jr. can be reached on (571) 272-2059, ext. 77.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application should be directed to the TC receptionist whose telephone number is (571) 272-1562.

A handwritten signature in black ink, appearing to read 'L. G. Lauchman', with a stylized flourish extending from the end.

L. G. Lauchman
Primary Examiner
Art Unit 2877

October 16, 2006